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ABSTRACT

The Pre-Doctoral Preparation for Applied Interdisciplinary Research project at the Pennsylvania State University is described. Project goals were to: (1) develop a training model for the preparation of interdisciplinary, applied researchers in the field of services for young handicapped children and their families; and (2) train a cadre of five outstanding doctoral level researchers from four disciplines (nursing, planning, child development, and early childhood education) for academic, research, and consultative roles. An interactive perspective of child development that sees a handicap, disability, or dysfunction as a result of a mismatch between the child and the situational characteristics was adopted. Disability was described as a deviation in body or functioning that resulted in a functional inadequacy in view of environmental demands. The model was designed to be easy to advocate and also capable of dissemination and reformation in places with different program development requirements. Information is presented on the following project components: learning objectives in elementary and intermediate statistics, research design, measurement and assessment, and evaluation research; objectives of the interdisciplinary training committee, the names and qualifications of the training committee members, and colloquium and seminar topics; activities of the research practicum; and outcomes of the project evaluation. A student evaluation and tracking form is appended. (SW)

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DIVISION OF INDIVIDUAL AND FAMILY STUDIES

Pre-Doctoral Preparation in Applied Interdisciplinary Research (Pre PAIR)

Final Report
August 31, 1979

U S DEPARTMENT OF HEALTH, EDUCATION & WELFARE
NATIONAL INSTITUTE OF EDUCATION

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INTRODUCTION

As specified by the Bureau of Education for the Handicapped, Division of Personnel Preparation, Special Projects are funded to develop new models of instruction, particularly those leading to the preparation of personnel for innovative roles in the education of handicapped children (Title 45, 121F.21). Priority areas include the preparation of persons to work, from an interdisciplinary persperctive, with handicapped infants and young children who are multiply handicapped and severely impaired.

The Pre-Doctoral Preparation for Applied Interdisciplinary Research (Pre PAIR) project was designed to meet the funding goals by:

1. Developing a training model for the preparation of interdisciplinary applied researchers, and

2. Training a cadre of five outstanding doctoral level researchers from four disciplines (nursing, planning, child development, and early childhood education) for academic, research, and consultative roles directly and indirectly related to the design and delivery of improved developmental services to multi-handicapped, seriously impaired infant and preschool children through the application of interdisciplinary knowledge and empirical methods.

The project was implemented through the Pennsylvania State University's graduate programs in Human Development and Family Studies, Man-Environment Relations, and Nursing within the College of Human Development and with the cooperation of the Division of Special Education of the College of Education. The project was administered through the College of Human Development's Office of the Associate Dean for Research and Graduate Studies with the Project Director serving as project administrator and chair of the Project Training Committee. Academic program direction was accomplished through a five-member training committee, at least one member of which served on the doctoral committee of each trainee. The project was funded for a period of three years.

PROJECT RATIONALE

A number of researchers and program developers have elucidated the relationship between the conceptual or theoretical rationale of a training program and its applied implementation components (cf. Parker, 1974; Peters, 1977; Peters & Dorman, 1974; Peters & Honig, 1974). While it is recognized that there is seldom possible a one-to-one correspondence between theory and practice, it is clear that the theoretical rationale for a program provides a reference plane for program decisions. When conceptualizing a training program for personnel in early childhood education, it seemed important that the rationale incorporate a broadly conceived contextual theory of development as well as recognition of the characteristics of educationally sound training models for adults. Pre PAIR included both.

General Conceptual Model of Development

Throughout the development of the training model and throughout the training of the trainees, an interactive perspective of child development, including the development of deviant behavior, was taken. Generally speaking, within this view, a handicap, disability, or dysfunction was considered not to reside exclusively with the child. Rather, disorders in functioning were viewed as the result of a mismatch between the child and the situational characteristics. Indeed, not only dysfunctional but average and superior performance were seen to result from a dynamic interaction between the developing child and developmental circumstances. Average physical, psychological, social, and economic environments were considered acceptable for the average. Any significant deviation in the child or context was construed as producing a sufficiently negative match to result in marked developmental delay or distortion. The physical and psycho-social environment was thought of as more than an enabling context for biological development. It followed,then, that the "cause" of defective functioning was interactive and was a cummulative and progressive product of child-environment reciprocity.

Following this line of reasoning, "disability" was described as a deviation in body or functioning that resulted in a functional inadequacy in view of environmental demands. The deviation was relative to the context in which it operated. "Handicapping" was viewed as imposed upon the disabled child as problems, disadvantages, social censure (e.g., reinforcement decrement) were imposed externally because of the manifestation of the disability (Smith & Neisworth, 1975). The disabled child was, in turn, likely to withdraw from or be deprived of developmentally important activities and experiences. The outcome of the sequence was hypothesized to constitute a reciprocal and self-feeding vicious cycle of pathology. The operating framework may be summarized as follows:

1. A child has some deviation.

2. The environment includes demands or expectations that make success less probable.

3. The deviation in that particular environment becomes a disability.

4. The disability, because of the responsiveness of the social-emotional environment, becomes a burden--a handicap.

5. The handicap becomes amplified as the attention to the deviation becomes a cue or stimulus to others.

6. Behaviors of others change (e.g., lowered expectations or restrictive interactions).

7. The child internalizes responses of others and/or has fewer learning opportunities.

8. The visibility of the deviance increases and/or its functional manifestations increase.

9. The handicap is amplified and contributes back into the process (Smith & Neisworth, 1975, p. 171-172).

In other words, the child's handicap was considered to originate as a functional deficiency arising from an expression of two distinct characteristics of the deviance (See Figure 1):

1. the stimulus capability (b) of the defect that may (e) or may not (f) elicit a reaction from the environment; and

2. a response limitation (a) or interference of normal functioning due to the impairment in an "incompatible" (d) normal environment. Note here that a dysfunctional interaction does not exist if (1) the environment is either compatible with the response limitation (c), (2) the responding environment does not react to the stimuli, thereby eliminating the stimulus potential (f), or (3) the environment discriminates the stimulus capability of either the impairment itself or the functional limitation, but for some reason it becomes a desirable attribute. The functional expression of the defect then becomes advantageous (g).

This general contextual model of child development provided the central "theme" of the Pre PAIR training program.

Interdisciplinary Perspective

Psychology, medicine, education, and other professions have typically used an analytic approach to the study of children. Our research literature characteristically can be indexed by separate, and discrete topics of investigation. But it is increasingly clear that the focus of research and intervention must be wider in order to accommodate the reality that the child functions as an integrated unit and that one liability or asset impinges upon others. As examples, problems of ingestion and nutrition may alter learning rates; contrariwise, problems in learning, accompanied by stress, may generate disgestive and thus nutritional problems. It appears most reasonable to view the child as a complex of characteristics, interacting with a complex of circumstances.

It follows from the positions stated that the knowledge base for an optimal approach must be derived from a synthesis of what is known from a variety of disciplines. Exceptional children, their families, teachers, and others have multiple and inter-related problems. Some of these problems are directly related to working with the child and include such things as child-rearing, nutrition, health management, instructional practices, and social arrangements. Additionally, families and schools have problems indirectly related

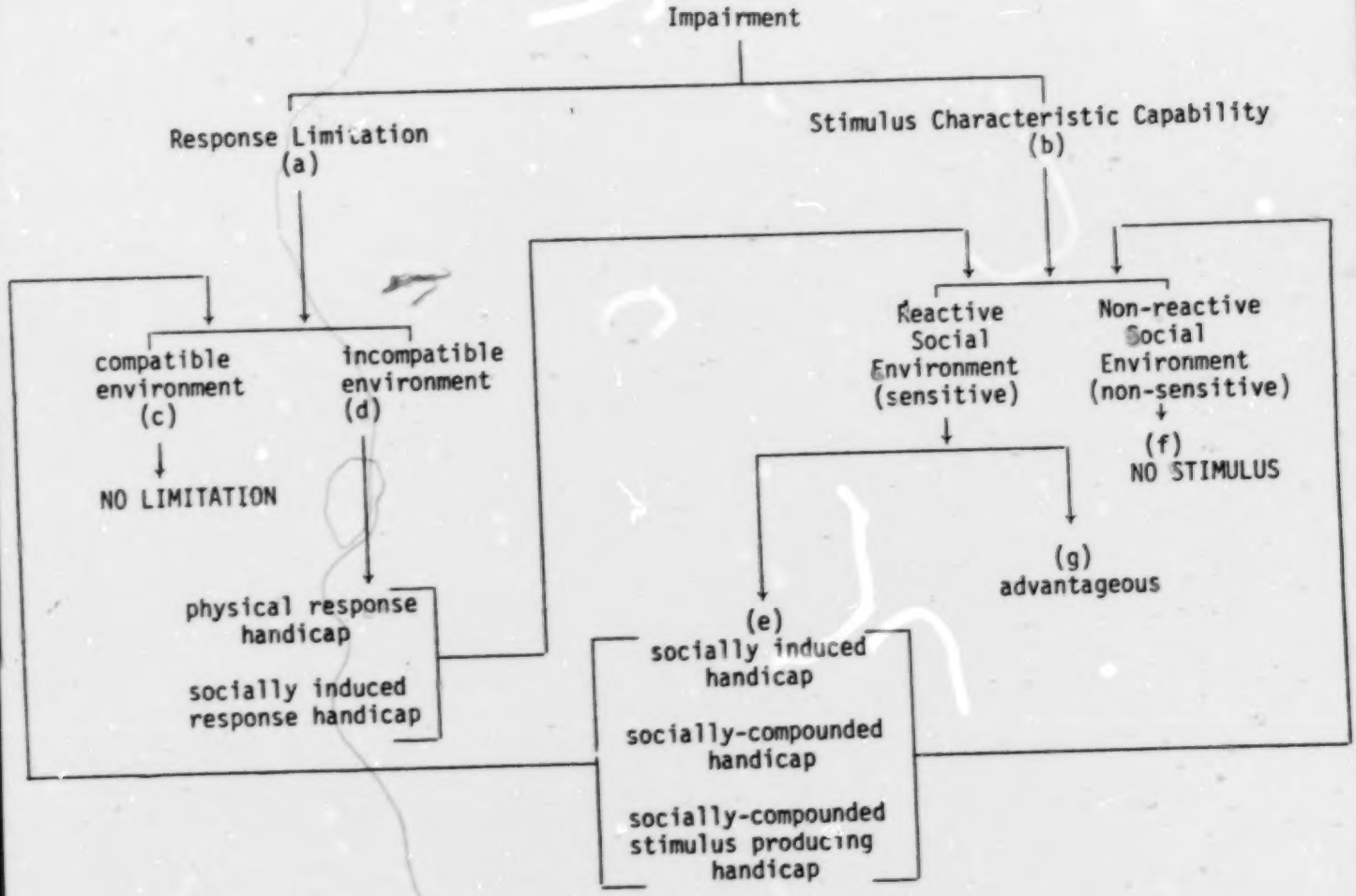

Figure 1. Contextual Model of Handicapping Conditions

to, but nevertheless affecting, the child, such as financial problems, styles and attitudes of care givers, physical enrivonmental circumstances, and other complications. Some problems are the result of the presence of a handicap, while others actually produce additional handicap.

This multiplicity of problems demands multifaceted intervention derived from a broad based knowledge of the process and context of development. Further, since most problems are interactive and overlapping, they must be approached in an integrated fashion. Thus, research and intervention with exceptional children must be interdisciplinary, as well as multidisciplinary. Knowledge and procedures across relevant disciplines must be synthesized. Yet, personnel preparation programs seldom train persons with this synthesis in mind--particularly at the highly specialized doctoral level. At the doctoral level, personnel preparation involves several different conceptions of integrated knowledge. The first, and the most traditional, is disciplinary and hierarchical. By definition, a person successfully completing the Ph.D. (at least within an academically respectable program) is competent within his or her discipline and has achieved the highest levels of integration of knowledge within that field. Such competence involves mastery of both the substantive knowledge base and the methodological tools required to extend that knowledge.

The second conception of integrated knowledge is interdisciplinary and holistic. This conception of integration concerns relating more than one discipline or learning experiences from two or more programs by treating the interfaces or commonalities. Here, mastery is not the aim but rather a self-conscious understanding of wholes. The process is one of articulation without creating a basic change in the integrity of either discipline. The premise behind articulation is that by exposing students to perspectives of two or more disciplines they will be better able to understand the problems of one field from the perspectives of the other. At the doctoral level, this form of integration of knowledge is frequently accomplished through a formal "minor".

The third conception of integrated knowledge is thematic and hierarchical. Here, the intent is for the creation of a synthesis of two or more disciplinary frameworks to produce a new approach to a common problem. The aim is mastery of a specialized subject or theme.

Given the nature of the contextual developmental model that seemed most relevant to research and intervention with young handicapped children, it was concluded that the training model for applied interdisciplinary researchers needed to promote all three levels of knowledge integration.

Dissemination Capability

The concept of dissemination of a model program has two components: advocacy and transportability.

Advocacy. Given a clear need for a program, a sound rationale for its design, and data to support its efficacy, it is worthwhile and relatively easy to advocate the program and encourage others to design and implement similar efforts. The focus of advocacy is the uniqueness of the program.

Transportability. The concept of transportability--the capability of a "model" program to be disseminated to or recreated in another place--places different program development requirements than does advocacy. The focus of transportability is commonality.

This distinction is especially clear when discussing doctoral level programs. Doctoral training is "people" oriented and individualized. A particular institution's capability to deliver training is dependent upon the unique characteristics of its staff and resources at a particular point in time. Each students' program and experiences are unique dependent upon their past experience, capabilities, aspirations, and interests. This is both necessary and desirable. As such a "model" program can provide only structural guidelines or a framework for others--not specific content, curricula, or methods. The guidelines and aspects of the framework may, however, be evaluated for their efficacy within a particular context and their potential for success elsewhere. It is the framework rather than the specifics that is transportable.

The desire for at least some degree of transportability requires that model components be explicit and described in sufficient detail that their parameters are known and replicable.

Desired, then, was a training model that:

1. promoted disciplinary excellence and knowledge integration,

2. permitted a holistic interdisciplinary approach,

3. focused on a contextual developmental model that could provide a unifying theme for interdisciplinary knowledge integration of the synthesis type, and

4. provided sufficient structural components for dissemination.

PROJECT GOALS

The goals of the Pre PAIR project were viewed as falling into four categories:

1. Training Model Development

2. Trainee Professional Development

3. Institutional Development

4. Knowledge Development

The goal areas delineate both the outcome areas to be assessed to determine project success and the means for validating project components.

More specifically, the project goals included:

1. The development of a potentially disseminatable framework for the training of interdisciplinary, applied researchers capable of making a unique contribution to the field of services for young handicapped children and their families.

2. To train five new professionals who:

   a. have the substantive knowledge base, research skills, and motivation to make a significant contribution to their chosen discipline,

   b. can identify the contribution of their discipline to the design and delivery of improved developmental services for multi-handicapped, seriously impaired infants and young children and their families,

   c. value and state career goals involving interdisciplinary efforts in the solution of problems associated with the early education and care of the handicapped,

   d. have the language and skills necessary for working in teams and as co-professionals with special educators in research and training for the benefit of early education programming and service provision for multi-handicapped children in normalized and integrated settings, and

   e. are well socialized in the professional development skills necessary for career success (e.g., proposal writing, grant management, publishing, presenting to professional groups and the like).

3. To produce and promote interdisciplinary cooperation and effort within the Pennsylvania State University in researching solutions to problems of the handicapped.

4. To produce advances in knowledge in both the trainee's professional field and in special education that will benefit services to the handicapped.

PROJECT COMPONENTS

Disciplinary Training Component

Five trainees were recruited during the three years of the project on the basis of their excellence and career potential. Two had career aspirations within the field of child development, one in early education, one in nursing, and one in regional planning. All had completed master's degrees and had prior practical experience (See Table 1).

Prior to being considered for a Pre PAIR traineeship by the project training committee, each was admitted to his or her respective Ph.D. program through the usual stringent and highly selective process (Human Development and Family Studies, for example, usually admits approximately 15 students selected from 250-300 applicants). Each trainee was subsequently required to meet the degree requirements and standards of excellence specified by his or her respective graduate program faculty.

The Pre PAIR project did, however, impose additional requirements on the disciplinary training of the participants. Additional requirements included the following:

Doctoral Committee Membership. The graduate school of the Pennsylvania State University requires that all doctoral students, when admitted to doctoral candidacy, have an official doctoral committee to supervise their program and guide their dissertation. This committee, consisting of a minimum of four graduate faculty members, is chaired by a senior member of the graduate faculty and must include at least one member from outside the student's own program--usually as a representative of the student's minor field. The Pre PAIR training project imposed one additional requirement, i.e., that at least one member of the doctoral committee also be a member of the project training committee. This requirement was imposed to insure conformity of the students' program with the project requirements and to permit relatively continuous monitoring of the students' progress.

Competency Specification. Each trainee was required to specify, at the time of admission to doctoral candidacy (at the end of the second term of study), the competency areas they sought and the specific competencies within each area that they hoped to achieve.

TABLE 1

EDUCATIONAL AND EXPERIENTIAL BACKGROUND OF TRAINEES

Trainee	BA/BS	Major	MA/MS	Major	Experience
1	Scripps College	Child Psychology	Merrill-Palmer Institute Wayne State University	Child & Family Human Development Resources	Lecturer and head teacher, U. of Guelph
2	Clark U.	Psychology	U. of Rochester	Education	Head teacher, Penn State U.
3	Kent State U.	Psychology	Kansas State U.	Family & Child Development	Head teacher, Kansas State U., Parent trainer, Penn State U.
4	Villanova U.	Nursing	New York U.	Nursing	Staff nurse, instructor of nursing, Penn State U.
5	Brown U.	Psychology	San Diego State C.	City Planning	Assistant planner, San Diego, Ca. Mental health worker

Additionally, the proposed means for accomplishing these goals, in terms of coursework or experience, was specified. These competency plans were reviewed by (a) a committee of the disciplinary graduate faculty and (b) by the project training committee. Upon approval, the plans became a contractual arrangement between the student, the graduate program faculty, the doctoral committee, and the project training committee. They provided the basis for the annual assessment of student progress. Excerpts from one competency contract are included in Table 2.

Research Methodology Core Specification. Each trainee was required, in addition to achieving the substantive competencies indicated above, to meet the requirements of a research methodology core. This requirement was imposed to insure (a) that all trainees developed a reasonably sophisticated level of competence in research methodology and (b) to create uniformity across graduate program areas. In point of fact, all trainees exceeded these requirements.

The methodology core was defined in four areas: I) statistics, II) research design, III) measurement and assessment, and IV) evaluation research. More specific sub-areas were listed to indicate what the training committee saw as particularly valuable concepts and techniques to be mastered. Sub-areas under statistics were divided into elementary and intermediate levels, but offerings in research design, measurement and assessment, and evaluation research generally took the form of superficial treatment of most of the important concepts at the elementary level and more detailed treatment of the same concepts at the intermediate level. The areas and sub-areas included:

I. A. Statistics (elementary)

1. Basic probability concepts
2. Concepts and measures of central tendency (e.g., mean, median, mode).
3. Concepts and measures of variability (e.g., variance, standard deviation).
4. Concepts and measures of relationship (e.g., simple correlation).
5. Concepts and measures of elementary statistical inference (e.g., t tests, chi-square statistics, confidence intervals, introductory analysis of variance designs).

B. Statistics (intermediate)

1. Two-(or more) way ANOVA.
2. Repeated measures ANOVA.
3. Covariance analysis.
4. Planned and a posteriori comparison among means.
5. Indices of strength of association (e.g., omega-squared, eta-squared, intra-class correlation).

TABLE 2

COMPETENCY AGREEMENT OF _____*[1]

Competency Area	Competencies	Criterion
I. Individual Development A. Infant and Child Development	1. To demonstrate a comprehensive knowledge of (a) infant developmen, developmental milestones during the infancy period, and the influences of biological, psychological and social factors on infant behavior; (b) child development including the influences of biological, psychological and social factors on development.	1. Complete with a grade of B or better 12 credits from: IFS 428 - Infant Development IFS 520 - Seminar in Prenatal and Infant Development IFS 429 - Advanced Child Development IFS 529 - Seminar in Child Development IFS 427 - Conceptions in Development IFS 549 - Developmental Theory or their equivalent.
	2. To demonstrate a broad understanding of early childhood disabilities within the broader context of child development.	2. Complete with a grade of B or better 12 credits from among the following: IFS 432 - Developmental Problems of Normal Children IFS 413 - Dysfunctions in the Developmental Process IFS 529 - Seminar in Child Development
B. Context of Development	1. To demonstrate a conceptual and practical understanding of contextual factors affecting development in infancy and early childhood.	1. Complete with a grade of B or better 9 credits from among the following: IFS 418 - Family Relationships IFS 424 - Economic Conditions in Relation to the Family IFS 410 - Communities and Families Ed Psy 421 - Learning Processes in Relation to Educational Practices Soc 403 - Advanced Social Psychology or their equivalent

TABLE 2 (cont'd)

Competency Area	Competencies	Criterion
C. Developmental Dysfunctions	1. To identify environmental and physiological factors involved in developmental delays.	1. Completion with a grade of B or better of 6 credits from among the following: EEC 400 - Introduction to Exceptional Children EEC 500 - Seminar in Special Education EEC 545 - Cerebral Palsy EEC 547 - Language Disorders in Children EEC 554 - Psychological and Educational Evaluation of Exceptional Children IFS 420 - Problems in the Analysis of Individual Development IFS 529 - Seminar in Child Development
II. Program Planning, Development, and Evaluation A. Program Development	1. To develop program components of comprehensive early intervention models.	1. Complete with a B or better 12 credits from the following practical courses: IFS 481 - Developmental Programming for Preschool Children IFS 504 - Practicum in Program Development for Preschool Children IFS 430 - Practicum in Preschool Groups IFS 506 - Projects in Design and Evaluation of Programs for Preschool Children IFS 508 - Parental Education and Produce each of the following products: a) a plan for early screening and identification b) a program plan and the design for evaluation of an integrated preschool

TABLE 2 (cont'd)

Competency Area	Competencies	Criterion
		c) a module for training of personnel working with developmentally delayed preschool children
B. Program Evaluation	1. To design and conduct evaluative research.	1. a) Produce an observational procedure consistent with an evaluation plan for assessing teacher/child interactions within a preschool setting
		b) Produce a plan for and conduct an evaluation of a specific early intervention program or one of its components

*[1] It should be noted that these competencies are in the substantive area of your training. They shall be completed in addition to those prescribed by the HDFS Graduate Program in the area of research methodology and communication skills.

6. Multiple correlation and regression.
7. Multivariate tests of significance (e.g., multivariate analysis of variance).
8. Multivariate correlational methods (e.g., canonical correlation, discriminant function analysis, factor analysis).

II. Research Design

A. Scientific method (e.g., procedures, models, assumptions, data-theory interplay, stating problems and testable hypotheses).
B. Experimental and quasi-experimental designs and their validity.
C. Developmental research designs (e.g., cross-sectional, longitudinal, sequential).
D. Design of multivariate research studies.
E. Single subject research designs.

III. Measurement and Assessment

A. Measurement theory and models.
B. Scale transformations.
C. Norms and standardization.
D. Concepts of reliability and validity.
E. Test construction and item analyses.
F. Scaling.

IV. Evaluation Research

A. The context of evaluation (e.g., decision making processes).
B. Definitions of evaluations (e.g., how it differs from research design).
C. Models for evaluation.
D. Methods of evaluation: Setting priorities.
E. Measurement in evaluation: Alternative measurement systems.
F. Administration of evaluation.

Fulfillment of these requirements was also audited annually by the students' doctoral committee (which included a member of the project training committee).

Interdisciplinary Training Component

The interdisciplinary training component of the Pre PAIR project was conceived as a university function rather than as the function of any one college, department, or program. Further, since the goals of the interdisciplinary training program involved both trainee accomplishments (articulation and integration of knowledge) and institutional changes, several sub-components were required.

Project Training Committee. At the hub of the interdisciplinary effort was the Project Training Committee.

The training committee was responsible for:

1. National dissemination of information about the program to prospective candidates.

2. Recruitment of candidates.

3. Selection of trainees.

4. Determination of financial need.

5. Approval of trainee plans of study, practica contracts, and competency agreements.

6. Recurring evaluation of student progress.

7. Conduct of the interdisciplinary research seminar.

8. Arrangements for the colloquium series and mini conferences.

9. Participation with and supervision of student research.

10. Counseling students and assisting with job placement.

11. Project evaluation.

Table 3 provides a listing of the faculty members who, during the three year course of the project, served on the project training committee and their respective areas of expertise.

Additionally, the expertise of this group was supplemented by the members of the doctoral committees of the students. A listing of these faculty are included in Table 4.

These 19 faculty members of diverse background and expertise worked closely with the trainees and cooperatively with each other. Together they provided a rich, central resource for the project.

Special Education Minor. In addition to their substantive, disciplinary area of competence each trainee was required to complete a 15 credit minor in Special Education. This requirement was imposed to insure at least some degree of articulation of the trainees knowledge base and that of special education. The intended outcome, as a minimum, was to provide the trainee with sufficient knowledge to relate to the field of special education as a co-professional.

Colloquium and Mini Conference Series. During the course of the project, a series of visiting scholars and professionals were invited to the Pennsylvania State University to make presentations

TABLE 3

MEMBERS OF TRAINING COMMITTEE

Name	Area of Expertise
Donald L. Peters	Professor of Human Development Division of Individual and Family Studies Ph.D. Educational Psychology and Child Development (Stanford University) -Early childhood education -Naturalistic observation in research in child development -Early education personnel training
John T. Neisworth	Professor of Special Education Division of Special Education Ph.D. Special Education and Educational Psychology (University of Pittsburgh -Behavior modification with children, early childhood special education -Program development for multihandicapped infants and young children (Dr. Neisworth is Director of B.E.H. funded Handicapped Infant Comprehensive Outreach Model Program)
Raymond G. Studer, Jr.	Professor of Man-Environment Relations M. Arch. (Harvard University) Ph.D. Planning (University of Pittsburgh) -Methodological issues in environmental design and management -Environmental behavioral programming
Lynn S. Liben	Associate Professor of Child Development Division of Individual and Family Studies Ph.D. (University of Michigan) -Cognitive development -Development of memory, spatial concepts -Development of cognitive abilities in deaf children
Sidney Cohn	Professor of Man-Environment Relations Division of Man-Environment Relations Ph.D. Architecture and Planning (University of North Carolina) -Environmental design -City and regional planning

TABLE 3 (cont'd)

Name	Area of Expertise
Elizabeth Susman	Assistant Professor of Human Development Department of Nursing Ph.D. (The Pennsylvania State University) -Parent/child relations -The hospitalized child
G. Phillip Cartwright	Professor of Special Education Division of Special Education Ph.D. Special Education and Psychology (University of Pittsburgh) -Mental retardation -Program development and education -Computer assisted instruction
Luz S. Porter	Associate Professor of Nursing Department of Nursing Ph.D. (New York University) -Parent/child nursing -The hospitalized child -Failure to thrive

TABLE 4

ADDITIONAL MEMBERS OF TRAINEE DOCTORAL COMMITTEES

Name	Area of Expertise
Carol Cartwright	Ph.D. (University of Pittsburgh) -Curriculum development -Observational methods -Early childhood education
Vladimir de Lissovoy	Ph.D. (Cornell University) -Teaching and research in child development and family relationships -Research in adolescent marriages, young children in naturalistic settings, socialization, parent-child relationships, Soviet developmental psychology, and parent education and counseling
Robert M. Griffin	Ph.D. (North Carolina State University) -Human ethology -Health and the spatial environment
Louise F. Guerney	Ph.D. (The Pennsylvania State University) -Teaching and research in interpersonal relationships, and in child development and parent education -Research in psychotherapy with children, including filial therapy
Karen W. Laub	Ph.D. (University of Kansas) -Infant and early childhood development -Infant assessment -Early intervention
Richard Lerner	Ph.D. (City University, New York) -Life span development theory -Social development
John R. Nesselroade	Ph.D. (University of Illinois) -Teaching and research in methodology and models for studying human development -Research on personality and ability change and development (Dr. Nesselroade is Professor-In-Charge, Graduate Program in Human Development and Family Studies)

TABLE 4 (cont'd)

Name	Area of Expertise
Arthur H. Patterson	Ph.D. (Northwestern University) -Application of social psychological research methods to analysis of man-environment systems -Field research methods
John A. Salvia	Ph.D. (Pennsylvania State University) -Social perception -Education of exceptional children
Gary Schilmoeller	Ph.D. (University of Kansas) -Early development and learning -Early education -Operant techniques
Dwain N. Walcher	M.D. (University of Chicago) -Specialist in interrelationship of biological and behavioral processes in development across the life span

and to meet informally and formally with the trainees and faculty associated with the project. The purposes of these visits were to:

1. Serve the informational needs of the trainees by presentation of issues related to the early education of exceptional children.

2. Assist in the articulation of the knowledge bases of the several disciplines.

3. Provide the most current information and consultation on research topics of interest to trainees and project staff.

4. Heighten institutional interest in the project and further facilitate interdisciplinary efforts.

5. Disseminate project activities.

Table 5 provides a listing of colloquium speakers funded by the project.

In addition to individual colloquium speakers, the training committee and trainees determined the most useful and efficient use of colloquium and consultation funds would be to invite several speakers at the same time--each to present around a single theme. It was felt this:

1. Permitted the active interchange of ideas among speakers, trainees, and staff.

2. Focused the expertise on the integration of knowledge from several disciplines, and

3. Encouraged wider faculty and student participation from the university as a whole, hence helping to achieve the institutional goals of the project.

Additionally, when interests of the project interfaced with interests of other activities of the university, larger cooperative efforts were undertaken.

The listing of such activities included the following:

Conference on Human and Family Development: Contributions of the Child to Marital Quality.* This conference, while of general interest, was enhanced by Pre PAIR participation. One section of the conference was directed to "The influence of medical, physically handicapping, and developmentally dysfunctional conditions of the child on marital quality and family interaction." Presenters in this session included Dr. Sam Korn (City University of New York) and Dr. Judy Howard (UCLA Medical Center).

*Conference proceedings were subsequently published as: R. Lerner & G. Spanier (Eds.). Child influence on marital and family interaction: A life-span perspective. New York: Academic Press, 1978.

TABLE 5

COLLOQUIUM SPEAKERS

Name	Affiliation	Topic
Susan Aronson, M.D.	Pennsylvania Medical College	Family/Child Health Advocacy
K. Eileen Allen	University of Kansas	Serving the Handicapped Preschool Child
Constance Dubin-Snyder	Bank Street	Child/Family Services in Denmark
Joseph Stevens, Ph.D.	Georgia State University	Parent Involvement in Early Education
Alice Honig, Ph.D.	Syracuse University	Infant Caregiving

Mini-conference on the Child in the Neighborhood Environment. In this conference, in depth discussion of the relationship of the child to the physical and social environment took place. Particular attention was addressed to analyses of broader environmental and contextual conditions and their contribution to the child's development, both normal and abnormal. Considerable progress was made on the refinement of the model of the interactive effects of a handicapping condition with the environment. Participants included:

-Roger Hart, Assistant Professor of Environmental Psychology, City University of New York

-Robin Moor, Project Co-Director Washington Environmental Laboratory, University of California, Berkeley

-Craig Ramey, Professor of Psychology, Frank Porter Graham Center, University of North Carolina

Conference on Spatial Representation and Behavior. This conference represented, in part, a further exploration of environmental factors and development. Participants and their topics included:

-Seymour Wapner, Clark University, who discussed work on handicapped children's transitions to new environments.

-Linda Acredolo, University of California, Davis, who discussed the development of children's representations of the spatial environment and the implications for environmental design.

Interdisciplinary Seminar. An interdisciplinary seminar was conducted three terms per year during the first two years of the project. The purposes of the seminar were to:

1. introduce the trainees to the research interests of the training committee faculty and vice-versa, and to provide opportunities for critiques of research ideas and plans;

2. explore and develop the conception of "interdisciplinary" research training;

3. provide the vehicle for the development of the contextual developmental model that served as the central theme of the project, and

4. provide a continuing interactive framework for the development of a "cohort" among the trainees and other students with like interests.

This seminar provided the principal mechanism for thematic integration of interdisciplinary knowledge. By-products of this seminar included:

1. A presentation by the trainees at the meetings of the Society for Research in Child Development, New Orleans, 1977, entitled: "Interdisciplinary training in child development".

2. A presentation by the trainees at the annual meetings of the National Association for the Education of Young Children, New York, 1978, entitled: "From federal legislation to local practice, PL 94-142".

3. A presentation by the trainees at the Pittsburgh First-born Conference, Pittsburgh, April 1979, entitled: "Parental involvement in early intervention programs for infants and young children".

4. A presentation by the trainees and staff at the annual meeting of the National Association for the Education of Young Children, Atlanta, Georgia, 1979, entitled: "Exceptional children in the lives of adults: Relationships among educational administrators, teachers, parents, and children".

5. A paper submitted for publication by two of the trainees entitled: Interdisciplinary research: Considerations for the prospective participant.

Additionally, for the four trainees who have completed their dissertation research, the theme of the seminar has provided a central theoretical focus for their individual research. (See below)

Research Practicum Component

Since the project was designed and funded to train researchers, research practica were a central part of the experience provided to each trainee.

On-Campus Research. Ongoing research activities on or associated with the Pennsylvania State University Park campus provided a rich variety of "part-time" practica for trainees. Examples of activities engaged in by trainees over the three-year period included:

1. Work with the B.E.H.-funded HICOMP project on the development of a training needs assessment inventory for assessing the overall capability and effectiveness of mainstream preschool units.

2. Work on the development of a father/child interaction observation instrument to be used for studying of sequential behavior in naturalistic settings.

3. Data analyses and write-up of a study conducted within the HICOMP project on differential teacher/child interactions with normal and multihandicapped children.

4. Development of procedures for assessing health conditions and development in families of handicapped children.

5. Assisting in the design of a playground with provisions for handicapped children and in the development of appropriate evaluation procedures.

Extended Research Practica. Although a university setting can provide a rich aray of both faculty resources and ongoing research activity, the educational potential of the institution can be greatly expanded through cooperative arrangements with other institutions and with particularly well qualified colleagues across the country. Additionally, there is a certain "real world" quality to training when it is conducted away from one's own institution. To broaden the experience and opportunities of the trainees, each was required to plan for and carry out an off-campus supervised research practicum experience for at least one full term. Four of the five trainees had completed this requirement by the expiration of the grant. Research sites, topics, and supervisors were as follows:

1. Educational Testing Service, Princeton, NJ. Under the supervision of Dr. Michael Lewis, the trainee worked on the development of battery of assessments for young (0-3yr) handicapped children and learned the administration of the REEL and the Bayley.

2. Educational Testing Service, Princeton, NJ. Under the supervision of Dr. Virginia Shipman, the trainee worked with the early learning and socialization group on a variety of data analysis activities and technical report writing activities.

3. National Institute of Mental Health, Bethesda, MD. Under the supervision of Dr. Jacob Gewirtz, the trainee worked on the neonatal attachment project exploring the physiological and behavioral correlates influencing the strength and affect of early mother-infant bonding patterns. During the practicum, the trainee became qualified in Brazelton Neonate Behavioral Assessment.

4. Milhauser Laboratories, New York University Medical Center. Under the supervision of Drs. Stella Chess, Paulina Fernandez, and Sam Korn, the trainee worked with the Congenital Rubella Behavior Studies project. Experiences included instrument

development, formulating clinical summaries of patient interviews, and data analysis. Additionally, the trainee gained proficiency on the Brazelton Neonatal Assessment Scales and received certification of reliability from the Children's Hospital Child Development Center, Boston, MA.

These experiences were designed to promote both the methodological skills and the professional development of the trainees. Written accounts by both supervisors and trainees indicate the richness of the experiences and their success in accomplishing the project objectives.

PROJECT EVALUATION

As indicated previously, the goals of the Pre PAIR project were viewed as falling into four major categories: training model development, trainee professional development, institutional development, and knowledge development. In essence, assessment of the first goal involves validation of the model framework. Such validation is determined by data from the remaining three goal areas. Therefore, the evaluation of the project focused upon the last three goals.

Trainee Professional Development

The evaluation of this goal of the project had three components: (1) student program progress, (2) short-term assessment of student outcomes, and (3) long-term assessment of student outcomes.

Student Program Evaluation and Tracking. For purposes of the project, a four-part student tracking form was devised. This form, retained in the students' folder, was updated as specific landmarks were achieved and during an annual review by the project training committee. The form had four sections (See Appendix A).

1. Graduate Program Progress. This section of the form was used to record dates of completion of each of the requirements of the doctoral training program. Such information provided "on time" information and each student's progress was compared with program standards. As such, it provided a rough means of assessing trainee disciplinary knowledge and competency (Goal 2a).

Achievements: Four trainees completed all program requirements within the three years of the project. All fully met the standards of their respective graduate program as approved by their doctoral committee including the passage of an oral and written comprehensive examination and completion of a Ph.D. dissertation. The doctoral committees involved rated three of the dissertations as "superior" and one as "above average" in quality.

The fifth trainee was added to the project during its final year. This trainee has moved rapidly towards the completion of the degree and has recently passed the comprehensive examination. It is expected she too will complete the degree requirements and be graduated by June 1980.

2. Training Project Activities. This section was developed to track activities and requirements specific to the Pre PAIR project. Tracking of this information indicated the adequacy of the involvement of the trainees in training grant activities. As such, it provided a means of assessing interdisciplinary knowledge integration (Goals 2b and 2d).

Accomplishments: The four trainees who participated for the full three years of the project fully met all requirements.

3. Specific Competencies Achieved. An example of the format used for this evaluative activity for assessing goal 2c has been previously provided (Table 2, pp 11-13).

Accomplishments: All five trainees developed competency contracts and have successfully achieved the competencies agreed upon as assessed by the doctoral committees involved and the project training committee.

4. Indices of Professional Development. In the final analysis, the accomplishment of project goal 2 (including all five sub-goals) cannot be fully assessed until the trainees have had a number of years experience in the field. A ten-year review of their professional contributions might be reasonable. However, there are several indices of progress that have traditionally been used within academic and research settings as indicators of professional impact (Goal 2e) that might be applied at the end of schooling and the beginning of a career. These indices can be construed as short-term and intermediate-term accomplishments of the project.

Short-Term Accomplishments. Summary data for the short-term accomplishments of the trainees are presented in Table 6. The data indicate excellent projessional progress. Each of the trainees seems well on the way to an established professional reputation. In addition to an average of 3.4 publications and 8.4 presentations per trainee, all four trainees who have thus far completed their dissertations have been successful in attracting funding for their research. Research topics and level of funding are presented in Table 7. The data presented in Tables 6 and 7 provide preliminary evidence of the accomplishment of project goal 2e and project goal 4.

Intermediate-Term Accomplishments. For the full realization of project goal 2, each of the trainees would have to be placed in an environment conducive to their continued professional development. As such, their initial employment placement is viewed as an intermediate accomplishment or an enabling objective for future success.

TABLE 6

TRAINEE PROFESSIONAL DEVELOPMENT ACCOMPLISHMENT

Activity	Trainee					Total
	1	2	3	4	5	
Publications (in press or in print)						
Journal articles	4	3	2	0	3	12
Chapters	2	0	0	1	0	3
Books (author or co-author)	0	0	1	0	0	1
Books (editor or co-editor)	1	0	0	0	0	1
Publications (in preparation or submitted)						
Journal articles	4	1	1	1	3	10
Chapters	0	0	0	0	0	0
Books (author or co-author)	0	0	1	0	0	1
Books (editor or co-editor)	0	0	0	0	0	0
Presentations						
International	1	0	0	0	0	1
National	4	6	4	5	5	24
Regional and local	6	2	3	4	2	17
Grants/Contracts	3	0	1	1	1	6
Totals	25	12	13	12	14	76

TABLE 7

TRAINEE RESEARCH FUNDING DURING PROJECT PERIOD

Topic	Amount	Agency
An evaluation of due process in special education	$ 250	Penn State Research Fund
A comparison of parental development in mothers of handicapped children and mothers of non-handicapped children	18,219	OE:BEH
A naturalistic study of the conditions and characteristics promoting social integration of handicapped children in early childhood education classrooms	7,315	OE:BEH
The effects of children's facial appearance and child care workers' assessment of functional capabilities	3,073	OE:BEH

Table 8 indicates the positions and placements of the four trainees who have thus far completed training.

Each placement is appropriate given the students' disciplinary and interdisciplinary training and should provide continued opportunities for research and professional development.

Institutional Change

Project goal 3 focused upon the development of institutional change in the form of interdisciplinary cooperation and effort within the university. Tables 3 and 4 have provided a listing of the 19 faculty members who have contributed to and cooperated with the project throughout the three years of its existence. Table 9 presents a listing of additional interdisciplinary activities that have been initiated,at least in part, as a result of the Pre PAIR projects. Further, course content in a number of courses has been modified to include information on handicapped children and the number of graduate students following a program similar to that of the Pre PAIR trainees is growing. Although it is impossible to assess the permanence of the institutional changes that have been noted, it is clear that a number of cross-departmental congenial relationships have been established. These constitute an important first step towards institutionalizing an interdisciplinary focus on handicapped children at Penn State.

Knowledge Generation

The fourth objective of the Pre PAIR project involved the generation of new knowledge concerning the development, care, and education of young handicapped children. This is, again, difficult to assess in the short term. One indication of progress toward the attainment of this goal is that four research projects have been funded and completed (See Table 7). A fifth study (Social interaction in developmentally integrated preschool classrooms. D. Peters, G. Schilmoeller, & J. Burgess) has recently been funded and is currently under way. Since all five projects derive from the "theme" of the Pre PAIR project, they represent an integrated line of research that has considerable potential for advancing our knowledge of the important factors in the mainstreaming of young handicapped children in early education settings.

CONCLUSIONS

All indications are that the framework adopted for the implementation of the Pre PAIR project has worked well. Although the goals stated for the project were all long term goals, the immediate achievements of the project provide clear evidence of progress toward their attainment.

TABLE 8

TRAINEE PLACEMENT

Position	Location
Assistant Professor of Human Development and Family Studies	Colorado State University, Fort Collins, Colorado
Clinical Nurse Educator	National Institute of Health, Bethesda, Maryland
Society for Research in Child Development-Congressional Fellow	Washington, D.C.
Assistant Professor of Child Development	The University of Texas-Austin Austin, Texas

TABLE 9

INTERDISCIPLINARY ACTIVITIES

Participants	Departmental Affiliation	Activity	Activity Title
1. John T. Neisworth Carol Cartwright Donald L. Peters	Special Education Curriculum & Instruction Individual & Family Studies	BEH Outreach Project	Handicapped Infant Comprehension Outreach Model Program (HICOMP)
2. Donald L. Peters Raymond Studer Gary Schilmoeller	Individual & Family Studies Man-Environment Relations Individual & Family Studies	Research Proposal	Assessment, Analysis and Implementation of Environmental Conditions Promoting Full Participation of Young Handicapped Children in Early Education Programs
3. Bruce M. Siegenthaler Richard C. Nowell Donald L. Peters	Speech Pathology & Audiology Speech Pathology & Audiology Individual & Family Studies	BEH Demonstration Project	Multihandicapped, Hearing Impaired Program
4. Lynn S. Liben Arthur Patterson Nora Newcombe	Individual & Family Studies Man-Environment Relations Psychology	Conference and Book	Spatial Representation and Behavior across the Life Span (New York: Academic Press In Press)
5. Lynn S. Liben Arthur Patterson and others	Individual & Family Studies Man-Environment Relations	Special Course (Penn State)	The Environment and Disabilities

In less concrete terms, the trainees and faculty associated with the project were and continue to be enthusiastic about both the conception of the project and its achievements.

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Peters, D. L., & Honig, A. Program implementation. In R. Colvin & E. Zaffiro (Eds.), Preschool education: A handbook for the training of early childhood educators. New York: Springer, 1974.

Smith, R. M., & Neisworth, J. T. The exceptional child: A functional approach. New York: McGraw Hill, 1975.

APPENDIX A

STUDENT EVALUATION AND TRACKING FORM

Student Evaluation and Tracking Form

TRAINEE'S NAME _____

I. Graduate Program Progress (enter date of Requirement Completion)

Requirement	Date Completed
Admission	
Doctoral Candidacy Examination	
Doctoral Committee Formed	
Members: _____	
_____	
_____	
_____	
_____	
Minor Declared	
Communication Requirement	
Methodological Core Certified	
Minor Completed	
Comprehensive Examination	
Dissertation Proposal Approved by Doctoral Committee	
Dissertation Proposal Approved by Human Subjects Committee	
Dissertation Accepted	
Final Oral Examination	
Graduation	

Comments:

II. Training Project Activities

Requirement	Date Completed
Accepted as trainee	
Enrolled in Interdisciplinary Seminar	_____ _____
	_____ _____
	_____ _____

Requirement	Date Completed
Attended Colloquium Series	_____ _____
	_____ _____
	_____ _____
Participation in Team Research	
Practica (Off Campus) and Location	_____ _____
	_____ _____
	_____ _____
Officially declared Special Ed Minor	

Comments:

III. Specific Competencies (To be filled in by Trainee after approval of Doctoral Committee and Training Grant Committee)

Competency	Criteria	Date Completed

IV. Indices of Professional Development*

Activity	Number
Publications in Preparation, Submitted	_____
Publications accepted or published	_____
Papers presented at Professional Meetings	_____
Conferences attended	_____
Grant Proposals submitted	_____
Grant Proposals funded	_____

* Attach current vita